

National Institute
of Standards and Technology



National Voluntary
Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



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CALIBRATION LABORATORIES

NVLAP LAB CODE 200408-0

MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFFRON METROLOGY LABORATORY

940 Venture Lane
Williamston, MI 48895
Mr. Craig A. VanBuren
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E-Mail: vanburenc9@michigan.gov

DIMENSIONAL

NVLAP Code: 20/D13
Surveying Rods and Tapes

Range in feet	Best Uncertainty (\pm) in inches ^{note 1}	Remarks
0 to 6	0.011	Tape to Tape Method
0 to 30	0.015	Tape to Tape Method
0 to 50	0.018	Tape to Tape Method
0 to 100	0.036	Tape to Tape Method

MECHANICAL

NVLAP Code: 20/M06
Force

Range	Best Uncertainty (\pm) in lbs ^{note 1}	Remarks
<=20,000 lb	40.0 lb	Wheel Load Weighers

September 30, 2004

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A handwritten signature in black ink, appearing to read "William R. Muhl".

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MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFFRON METROLOGY LABORATORY

NVLAP Code: 20/M08

Mass

Range	Best Uncertainty (\pm) ^{note 1}	Remarks
20 kg	16 mg	Echelon I
10 kg	3.2 mg	Echelon I
5 kg	3.7 mg	Echelon I
3 kg	2.3 mg	Echelon I
2 kg	1.6 mg	Echelon I
1 kg	0.059 mg	Echelon I
500 g	0.033 mg	Echelon I
300 g	0.026 mg	Echelon I
200 g	0.020 mg	Echelon I
100 g	0.023 mg	Echelon I
50 g	0.013 mg	Echelon I
30 g	0.0096 mg	Echelon I
20 g	0.008 mg	Echelon I
10 g	0.0084 mg	Echelon I
5 g	0.0042 mg	Echelon I

September 30, 2004

A handwritten signature in black ink, appearing to read "Wm. R. Muhl".

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3 g	0.0026 mg	Echelon I
2 g	0.0018 mg	Echelon I
1 g	0.0012 mg	Echelon I
500 mg	0.0008 mg	Echelon I
300 mg	0.0007 mg	Echelon I
200 mg	0.0007 mg	Echelon I
100 mg	0.0008 mg	Echelon I
50 mg	0.0004 mg	Echelon I
30 mg	0.0003 mg	Echelon I
20 mg	0.0003 mg	Echelon I
10 mg	0.0003 mg	Echelon I
5 mg	0.00025 mg	Echelon I
3 mg	0.00022 mg	Echelon I
2 mg	0.0002 mg	Echelon I
1 mg	0.0002 mg	Echelon I
20 kg	16 mg	Echelon II
10 kg	2.4 mg	Echelon II

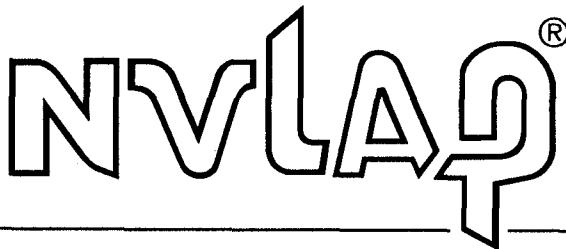
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MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFFRON METROLOGY LABORATORY

5 kg	2.0 mg	Echelon II
3 kg	1.8 mg	Echelon II
2 kg	1.6 mg	Echelon II
1 kg	0.074 mg	Echelon II
500 g	0.082 mg	Echelon II
300 g	0.072 mg	Echelon II
200 g	0.071 mg	Echelon II
100 g	0.033 mg	Echelon II
50 g	0.024 mg	Echelon II
30 g	0.018 mg	Echelon II
20 g	0.019 mg	Echelon II
10 g	0.013 mg	Echelon II
5 g	0.0095 mg	Echelon II
3 g	0.0061 mg	Echelon II
2 g	0.0044 mg	Echelon II
1 g	0.0034 mg	Echelon II
500 mg	0.0028 mg	Echelon II

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NVLAP LAB CODE 200408-0

MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFFRON METROLOGY LABORATORY

300 mg	0.0026 mg	Echelon II
200 mg	0.0022 mg	Echelon II
100 mg	0.0023 mg	Echelon II
50 mg	0.0015 mg	Echelon II
30 mg	0.0015 mg	Echelon II
20 mg	0.0009 mg	Echelon II
10 mg	0.0012 mg	Echelon II
5 mg	0.0009 mg	Echelon II
3 mg	0.0009 mg	Echelon II
2 mg	0.0009 mg	Echelon II
1 mg	0.0008 mg	Echelon II
500 kg	3100.0 mg	Echelon III
250 kg	1800.0 mg	Echelon III
50 kg	220.0 mg	Echelon III
25 kg	58.0 mg	Echelon III
20 kg	70.0 mg	Echelon III

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MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFFRON METROLOGY LABORATORY

10 kg	26.0 mg	Echelon III
5 kg	5.3 mg	Echelon III
3 kg	5.3 mg	Echelon III
2 kg	3.1 mg	Echelon III
1 kg	2.8 mg	Echelon III
500 g	1.9 mg	Echelon III
300 g	1.9 mg	Echelon III
200 g	0.14 mg	Echelon III
100 g	0.057 mg	Echelon III
50 g	0.041 mg	Echelon III
30 g	0.041 mg	Echelon III
20 g	0.038 mg	Echelon III
10 g	0.033 mg	Echelon III
5 g	0.022 mg	Echelon III
3 g	0.057 mg	Echelon III
2 g	0.057 mg	Echelon III
1 g	0.055 mg	Echelon III

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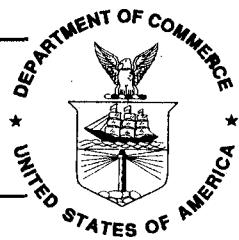
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MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFFRON METROLOGY LABORATORY

500 mg	0.010 mg	Echelon III
300 mg	0.010 mg	Echelon III
200 mg	0.006 mg	Echelon III
100 mg	0.007 mg	Echelon III
50 mg	0.007 mg	Echelon III
30 mg	0.007 mg	Echelon III
20 mg	0.007 mg	Echelon III
10 mg	0.005 mg	Echelon III
5 mg	0.005 mg	Echelon III
3 mg	0.006 mg	Echelon III
2 mg	0.006 mg	Echelon III
1 mg	0.006 mg	Echelon III
50 lb	47 mg	Echelon II
25 lb	26 mg	Echelon II
20 lb	26 mg	Echelon II
10 lb	5.3 mg	Echelon II

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5 lb	5.3 mg	Echelon II
3 lb	3.1 mg	Echelon II
2 lb	2.8 mg	Echelon II
1 lb	1.9 mg	Echelon II
0.5 lb	1.9 mg	Echelon II
0.3 lb	0.14 mg	Echelon II
0.2 lb	0.057 mg	Echelon II
0.1 lb	0.041 mg	Echelon II
0.05 lb	0.041 mg	Echelon II
0.03 lb	0.038 mg	Echelon II
0.02 lb	0.033 mg	Echelon II
0.01 lb	0.022 mg	Echelon II
0.05 lb	0.057 mg	Echelon II
0.003 lb	0.057 mg	Echelon II
0.002 lb	0.055 mg	Echelon II
0.001 lb	0.010 mg	Echelon II
8 oz	1.9 mg	Echelon II

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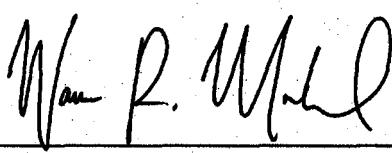
NVLAP LAB CODE 200408-0

MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFFRON METROLOGY LABORATORY

4 oz	0.14 mg	Echelon II
2 oz	0.057 mg	Echelon II
1 oz	0.041 mg	Echelon II
1/2 oz	0.041 mg	Echelon II
1/4 oz	0.033 mg	Echelon II
1/8 oz	0.022 mg	Echelon II
1/16 oz	0.057 mg	Echelon II
1/32 oz	0.055 mg	Echelon II
5000 lb	64000.0 mg	Echelon III
1000 lb	2000.00 mg	Echelon III
500 lb	1500.0 mg	Echelon III
100 lb	220.0 mg	Echelon III
50 lb	140.0 mg	Echelon III
25 lb	32.0 mg	Echelon III
20 lb	32.0 mg	Echelon III
10 lb	11.0 mg	Echelon III

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5 lb	5.3 mg	Echelon III
3 lb	5.3 mg	Echelon III
2 lb	3.0 mg	Echelon III
1 lb	2.7 mg	Echelon III
0.5 lb	1.4 mg	Echelon III
0.3 lb	0.1 mg	Echelon III
0.2 lb	0.088 mg	Echelon III
0.1 lb	0.051 mg	Echelon III
0.05 lb	0.033 mg	Echelon III
0.03 lb	0.021 mg	Echelon III
0.02 lb	0.038 mg	Echelon III
0.01 lb	0.032 mg	Echelon III
0.005 lb	0.067 mg	Echelon III
0.003 lb	0.067 mg	Echelon III
0.002 lb	0.045 mg	Echelon III
0.001 lb	0.044 mg	Echelon III

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8 oz	1.4 mg	Echelon III
4 oz	0.11 mg	Echelon III
2 oz	0.04 mg	Echelon III
1 oz	0.033 mg	Echelon III
1/2 oz	0.038 mg	Echelon III
1/4 oz	0.034 mg	Echelon III
1/8 oz	0.045 mg	Echelon III
1/16 oz	0.059 mg	Echelon III
1/32 oz	0.056 mg	Echelon III

NVLAP Code: 20/M12

Volume and Density

Range	Best Uncertainty (\pm) ^{note 1}	Remarks
2000 gallon	120.0 in ³	Volume Transfer
1500 gallon	90.0 in ³	Volume Transfer
1000 gallon	71.0 in ³	Volume Transfer
750 gallon	50.0 in ³	Volume Transfer
500 gallon	27.0 in ³	Volume Transfer
100 gallon	4.6 in ³	Volume Transfer

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50 gallon	3.2 in ³	Volume Transfer
25 gallon	2.8 in ³	Volume Transfer
5 gallon	0.50 in ³	Volume Transfer
25 gallon	0.78 in ³	Volume Gravimetric
5 gallon	0.28 in ³	Volume Gravimetric
1 gallon	0.052 in ³	Volume Gravimetric
1/2 gallon	0.043 in ³	Volume Gravimetric
1 quart	0.046 in ³	Volume Gravimetric
1 pint	0.022 in ³	Volume Gravimetric
1/2 pint	0.011 in ³	Volume Gravimetric
1 quart (dry)	0.22 in ³	Volume Gravimetric
1 pint (dry)	0.11 in ³	Volume Gravimetric
1/2 pint (dry)	0.11 in ³	Volume Gravimetric
2 liter	0.17 in ³	Volume Gravimetric
1 liter	0.19 in ³	Volume Gravimetric
100 ml	0.14 in ³	Volume Gravimetric

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THERMODYNAMICS

NVLAP Code: 20/T03
Laboratory Thermometers

<i>Range in °C</i>	<i>Best Uncertainty (\pm) in °C^{note 1}</i>	<i>Remarks</i>
0 to 30	0.22	Liquid in glass

NVLAP Code: 20/T07
Resistance Thermometry

<i>Range in °C</i>	<i>Best Uncertainty (\pm) °C^{note 1}</i>	<i>Remarks</i>
0 to 30	0.011	PRT, RTD

1. Represents an expanded uncertainty using a coverage factor, k=2.

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